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LINGUISTIC CODES, HESITATION PHENOMENA AND INTELLIGENCE *

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Two linguistic codes have been proposed, elaborated and restricted. These codes are regarded as functions of different social structures. The codes are considered to entail qualitatively different verbal planning orientations which control different modes of self-regulation and levels of cognitive behaviour. Social class differences in the use of the codes were postulated and the hesitation phenomena associated with them predicted. Speech samples were obtained and the hesitation phenomena analysed from a discussion situation involving small groups of middle-class and working-class subjects with varying I.Q. profiles.

INTRODUCTION

In previous papers (Bernstein, 1959, 1961a, 1961b) attempts have been made to find a way of analysing some of the inter-relationships between social structure, language use and subsequent behaviour. In some way the form of the social relationship acts selectively on the speech possibilities of the individual and again in some way these possibilities constrain behaviour. Luria (1959, 1961) has explored both theoretically and experimentally the regulative function of speech. I take it that a proposition central to his view is that when a child speaks he voluntarily produces changes in his field of stimuli and his subsequent behaviour is modified by the nature of those changes. I shall here propose that forms of spoken language in the process of their learning initiate, generalise and reinforce special types of relationship with the environment and thus create for the individual particular dimensions of significance. One of the tasks of the sociologist would be to seek the social origins of particular linguistic forms and to examine their regulative function. This task would become an attempt to reduce the inter-relationships between social structure, language use and individual behaviour to a theory of social learning. Such a theory should indicate what in the environment is available to be learned, the conditions of learning and the constraints on subsequent learning. From this point of view the social structure transforms language possibilities into a specific code which elicits, generalises and reinforces those relationships necessary for its continuance.

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DEFINITION OF THE CODES

Two general types of code can be distinguished: elaborated and restricted. They can be defined, on a linguistic level, in terms of the probability of predicting for any one speaker which structural elements will be used to organise meaning. In the case of an elaborated code, the speaker will select from a relatively extensive range of alternatives and therefore the probability of predicting the pattern of organising elements is considerably reduced. In the case of a restricted code the number of these alternatives is often severely limited and the probability of predicting the pattern is greatly increased.

On a psychological level the codes may be distinguished by the extent to which each facilitates (elaborated code) or inhibits (restricted code) the orientation to symbolise intent in a verbally explicit form. Behaviour processed by these codes will, it is suggested, develop different modes of self-regulation and so different forms of orientation. The codes themselves are functions of a particular form of social relationship or more generally qualities of social structures.

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SOCIOLOGICAL CONDITIONS FOR THE TWO CODES

The pure form of a restricted code would be one where the lexicon and hence the organising structure, irrespective of its degree of complexity, are wholly predictable. Examples of this pure form would be ritualistic modes of communication - relationships regulated by protocol, religious services, the opening gambits at a cocktail party, conversations about the weather, a mother telling her children stories, etc. It is clear that in the pure form of the restricted code individual intent can only be signalled through the non-verbal components of the situation, i.e. intonation, stress, expressive features, etc. Specific verbal planning will be minimal.

What is more often found is a restricted code[1] where prediction is only possible at the structural level. The lexicon will vary from one case to another but in all cases it is drawn from a narrow range. The social forms which produce this code will also vary but the most general condition for its development will be based upon some common set of closely shared identifications, self-consciously held by the members, where immediacy of the relationship is stressed. It follows that these social relationships will be of an exclusive character. The speech is played out against a background of communal, self-consciously held interests which removes the need to verbalise subjective intent and make it explicit. The meanings will be condensed. Examples of the use of this code are to be found in the peer group of children and adolescents, criminal sub-cultures, combat units in the armed services, senior common rooms, between married couples of long standing, etc. In these social relationships the sequences will tend to be well organised at both the structural and lexicon levels. Verbal planning will tend to be reduced and the utterances fluent. The non-verbal component (expressive features) will be a major source for indicating changes in meaning. These expressive features will tend to reinforce a word or phrase rather than finely discriminate between meanings. The utterances will be well ventilated. They will tend to be impersonal in that the speech is not specially prepared to fit a particular referent. How things are said rather than what is said becomes important. The intent of the listener may be taken for granted. Finally, the content of the speech is likely to be concrete, descriptive and narrative rather than analytical and abstract. The major function of this code is to reinforce the form of the social relationship (a warm and exclusive relationship) by restricting the verbal signalling of individuated responses.[2]

An elaborated code has its origins in a form of social relationship which increases the tension on the individual to select from his linguistic resources a verbal arrangement which closely fits specific referents. The code becomes a vehicle for individuated responses. If a restricted code facilitates the construction and exchange of social symbols, then an elaborated code facilitates the construction and exchange of individuated symbols. The verbal planning function associated with this code promotes a higher level of structural organisation and lexicon selection. The preparation and delivery of relatively explicit meaning is the major purpose of the code. This does not necessarily mean that the content will be abstract, although this is inherent among the possibilities regulated by this code, but that the code will facilitate the verbal transmission and elaboration of the individual's experience. The condition of the listener will not be taken for granted, as the individual through verbal planning will modify his speech in relation to the specific requirements of the listener. This is not to say that such modification will always occur, but that the possibility exists. The code induces, through its regulation,

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1. In different ways Vigotsky (1939), Malinowski (1923) and Sapir (1931) have drawn attention to this form of speech.

2. One important channel for individuated responses is humour, wit or the joking relationship. These channels allow an individuated response but an important effect is to reinforce the solidarity of the social relationship.

a sensitivity to the implications of separateness and difference and points to the possibilities inherent in a complex conceptual hierarchy for the organisation of experience. Finally the expressive features which accompany the speech will tend to discriminate finely between meaning within sequences.

FORMAL SOCIOLOGICAL CONDITIONS FOR THE EMERGENCE OF THE TWO CODES

A restricted code is particularistic with reference to meaning and to the social structure which controls its inception. The speech model for this code is universalistic as its use depends on the characteristics of a form of social relationship which can arise at any point in the social structure. An elaborated code is universalistic with reference to its meaning and potentially universalistic with reference to the social structure which controls its inception. The speech model for this code in contemporary societies is particularistic. This does not mean that its origin is to be sought in the psychological qualities of the model but that the model is an incumbent of a specialised position which is a function of the general system of social stratification. The models for the two codes lie in different sociological dimensions. In principle this is not necessary; it happens to be the case at the moment.

In terms of learning the codes are different. The abbreviated structures of a restricted code may be learned informally and readily. They become well-habituated. The greater range of and selection from structural alternatives associated with an elaborated code normally require a much longer period of informal and formal learning. An elaborated code is universalistic with reference to its meaning inasmuch as it summarises general social means and ends. A restricted code is particularistic with reference to its meaning inasmuch as it summarises local means and ends. The degree of elaboration is thus a function of the generality of the means and ends while the degree of restriction is a function of the parochialness of the social means and ends. Thus because a restricted code is universalistic with respect to its model, all people have access to the code and to its local condensed meanings, but because an elaborate code is particularistic with respect to its model only some people have access to the code and to the potential universalistic character of its meanings. Access to an elaborated code will depend not on psychological factors but on specialised social positions within the social structure, by virtue of which a particular type of speech model is made available. Normally, but not inevitably, these positions will coincide with a stratum seeking, or already possessing, access to the major decision-making areas of the social structure.

The distinctions which have been drawn in terms of the availability of the speech model and the subsequent differences in coding are useful in isolating the general conditions for a special case of a restricted code. This is where the speech model is particularistic and the meaning is also particularistic. In this situation the individual is wholly constrained by the code. He has access to no other. It is with this situation that this paper is concerned.

The sociological conditions may be summarised as follows:

(1) Restricted code (lexicon prediction): ritualism.

(a) restricted code (high structural prediction).

Model: universalistic; meaning particularistic.

(b) restricted code (high structural prediction).

Model: particularistic; meaning particularistic.

(2) Elaborated code (low structural prediction).

Model: particularistic; meaning universalistic.

DEFINITION OF THE TERM 'CODE'

At this point it is necessary to define the sense in which the word 'code' is used. The following is both an attempt at definition and an

attempt to show the relationship with verbal planning.

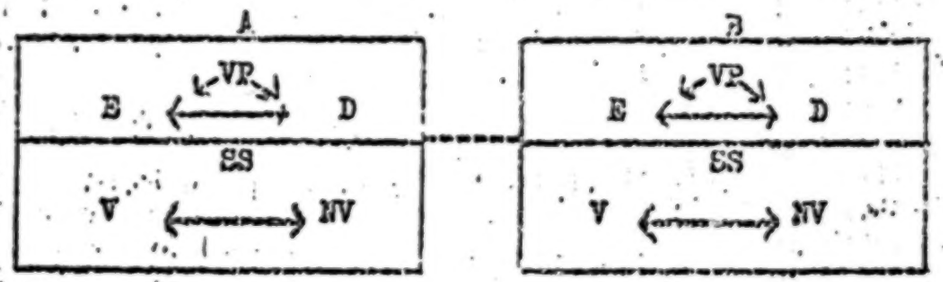

Fig. 1.

In the model represented in Fig. 1, the section below the line represents the signal store in which interrelated verbal and non-verbal signals are contained. Above the line, E and D represent the usual encoding and decoding processes controlled and integrated by the verbal planning function (VF).

When A signals to B it is suggested that at least the following takes place:

ORIENTATION: B scans the incoming message for a pattern of dominant signals. (This is the beginning of the verbal planning sequence.)

Associations to the pattern of dominant signals control Selection from the signal store (V + NV).

ORGANISATION and integration of signals (V + NV) to produce a sequential reply.

The term 'code' as I use it implies the principles which regulate these three processes. It follows that restricted and elaborated codes will establish different kinds of control which crystallise in the nature of verbal planning. The latter is a resultant of the conditions which establish the patterns of orientation, association and organisation. The originating determinants of this trio would be the form of the social relationship or more generally the quality of the social structure. This would allow the following postulate: the form of the social relationship acts selectively on the type of code which then becomes a symbolic expression of the relationship and proceeds to regulate the nature of the inter-action. Simply, the consequences of the form of the social relationship are transmitted and sustained by the code on a psychological level. Strategic learning would be elicited, sustained and generalised by the code which would mark out what has to be learned and would constrain the conditions of successful learning.

It is clear that what is made available to be learned, the conditions of learning and the subsequent constraints are different in the two codes. Individuals will of course shift from one to the other according to the form of the social relationship and so their usage is independent of the personality and intelligence of the speakers. These factors may influence the level within each code but the latter is not inevitably a function of these psychological factors. This is a point of some importance, if the situation of an individual who is wholly constrained by a restricted code (structural prediction) is considered. The general condition for this code, it will be remembered, is where both the model and the meaning are particularistic. In this country, it is suggested, this is the situation of the lower working-class, including rural groups. Together these groups represent 29% of the population. An elaborated code is associated with the middle-class and adjacent social strata. These codes, however, are not necessarily clear functions of social class, but in advanced industrialised societies the association will have a high degree of probability. Class is only one of many principles of social stratification and differentiation.

Thus in this country children from these respective social strata will be exposed to different orders of learning and so their resultant modes of self-regulation and orientation will be different, irrespective of their levels of innate intelligence. The net effect of the constraint of a restricted code will be to depress potential linguistic ability, raise the

relevance of the concrete and descriptive level of response and inhibit generalising ability at the higher ranges. At the same time it will reinforce the solidarity of the developing child with his peers, which in turn will reinforce the solidarity of the code. Children from the middle-class and adjacent social strata will be exposed to both a restricted and an elaborated code and so to the possibilities symbolised by both these codes.

An experiment was designed to see whether these two codes were associated with social class and more particularly to see whether the orientation to use one or the other was independent of measured intelligence. At this point a problem arose of the measures which would discriminate the two codes in other than linguistic terms. Measures were required which would throw light upon the major controls of the codes, that is would illuminate the verbal planning functions. The research, originated and systematically developed by Goldman-Eisler (1954, 1958a, b, c, 1961a, b) into the nature of hesitation phenomena seemed the most promising technique. Her work has demonstrated a relationship between levels of coding activities and hesitation behaviour. She has found that the habit strength of speech sequences can be inferred from the hesitation phenomena. Levels of verbal planning thus become susceptible to objective measurement and discrimination. In terms of this work the following predictions were made about the hesitation phenomena associated with elaborated and restricted codes when speakers were subject to a group discussion situation.

(1) Holding Verbal and Non-Verbal I.Q. constant, working-class groups would pause less frequently and spend less time pausing than middle-class groups.

(2) Holding Non-Verbal I.Q. constant, working-class groups would pause less frequently and spend less time pausing than middle-class groups.

(3) Irrespective of Non-Verbal I.Q. the hesitation phenomena of working-class subjects would be similar.

(4) A general relationship would be found between the two I.Q. tests for the working-class group: the verbal scores would be severely depressed in relation to the scores at the higher ranges of the non-verbal test. It was expected that this general relationship would not hold for the middle-class group.

DESCRIPTION OF THE EXPERIMENT

Two extreme social groups were chosen for linguistic comparison. One group consisted of 61 male subjects between fifteen and eighteen years of age, matched for education and occupation but whose homes were distributed between inner and outer London. These subjects were compulsory students at a day

TABLE 1

Group		Subjects	Verbal I.Q.	S.D.	Non-verbal I.Q.	S.D.	Age
Middle class	1	5	125.0	1.81	123.8	2.75	16.2
	2	5	108.0	2.72	123.0	2.24	16.0
Working class	3	5	105.0	2.14	126.0	0.0	15.6
	4	4	97.5	2.60	123.0	3.08	16.5
	5	5	100.0	4.60	100.6	3.20	16.2

release college where they attended one day a week to receive a general non-vocational education. They were employed as messengers and none had received a grammar school education. This group will be referred to as working-class. The second group consisted of 45 male subjects matched for age with the first group, all pupils at one of the six major public schools. These boys represented a reasonable cross-section of the upper school with respect to educational attainment and particular subject interest. This group will be referred to as middle-class.

The two groups were given the Raven Progressive Matrices 1938 (a non-verbal measure of intelligence) and the Mill Hill Vocabulary Scale Form. I Senior. These tests were selected so as to afford a comparison with 309 working-class subjects who had previously been tested (Bernstein, 1958). From the two major groups five sub-groups were selected which would permit the following comparisons (see Table I).

(1) General inter-class comparison.
(2) Class comparisons with non-verbal intelligence held constant.
(3) Class comparisons with verbal and non-verbal intelligence held constant.
(4) Comparisons between different I.Q. profiles holding class constant.

A tape-recorded, relatively undirected, discussion was taken with all groups on the topic of the abolition of capital punishment. It was possible to make a comparative analysis of the speech forms associated with the two major groups and the variations associated with the sub-groups. It was thought that the working-class group would find the test situation threatening and that this would interfere with the speech and consequently all working-class groups had two practice discussions (one a week) before the test discussion. This was not the case for the middle-class groups as such trials were impracticable. The working-class groups were drawn from four different forms and the sub-groups contained members with varying degrees of personal contact. The social and educational contact of the middle-class group was not known. The probability of this highly selected group with varying characteristics containing members all of whom were in the same form or house was low, as the Upper School is very large and there are six houses. As far as possible the boys set the level of discussion and the research worker intervened when a particular sequence was exhausted, when a boy was monopolising the discussion or when voluntary contributions came to an end. The number of such interventions was considerably greater for the working-class groups for the last-mentioned reason. In order to permit maximum freedom little attempt was made to standardize the questions put to the groups. The major aim was to get the boys talking and to permit the groups, themselves, to establish the level of coding difficulty.

RESULTS OF THE INTELLIGENCE TESTING FOR THE MAJOR GROUPS

These results have been published in detail elsewhere (Bernstein, 1960) and only a summary will be given here. For the working-class group all the verbal I.Q. scores are within the average range of the test but 36 subjects (59%) scored above average on the non-verbal test while 11 subjects (18%) scored between 120 - 126+ I.Q. points. In other words, 10% of the group made scores which placed them in the top 5% of the population. A general relationship held. The higher the score on the non-verbal test, the greater the discrepancy between the scores on the two tests. In relation to the higher ranges of the Matrices test the language scores were severely depressed. This general relationship between the two tests for the working-class group was <u>not</u> found for the middle-class group. The mean scores for the two tests at different ranges matched each other very closely.

SPEECH SAMPLE

The speech sample consisted, for each group, of the next 1800 words approximately which followed the first five minutes of the discussion. An utterance was considered to be from the time a subject commenced to talk until he finished. The utterances were divided into long and short. The latter were sequences containing forty syllables or more and the former were sequences of between ten and forty syllables. This division follows from the work of Goldman-Eisler (1954) who found that the hesitation phenomena associated with short utterances is unstable. The two categories of utterance have been analysed separately and only the results of the long utterances will be given here.

METHOD

Visual recordings of the speech were made on teledeltos paper and the speech on the magnetic tape was then synchronised with these visual records. Measurements were made from them of the following quantities for each utterance:

(a) The number of words.
(b) The number of syllables.
(c) The articulation rate: this time is based on the rate of vocal speech utterance exclusive of pauses.
(d) The mean number of words per pause (W/P). This gives a measure of the phrase length or frequency of pauses.
(e) The mean pause duration per word per utterance (P/W).
(f) The mean word length in number of syllables. Pauses with a duration of under 0.25 sec. were ignored.

TABLE 2

Group	Subjects	Number of utterances	Mean no. of utterances	Number of words	Mean no. of words	S.D.
1	5	21	4.2	1085	99.4	59.33
2	5	19	3.8	1242	64.4	8.06
3	5	22	4.4	2205	101.2	46.89
4	3	12	4.0	793	61.9	27.80
5	4	24	6.0	1329	54.8	5.86

ORGANISATION OF THE SUB-GROUPS

Information about the sub-groups is contained in Table 2. The difference in numbers in groups 4 and 5 arose because one member from each group failed to contribute a long utterance and one member from group 4 was absent from the college on the day of the study. It is perhaps of interest that the two members who failed to make a long utterance were both members of the working-class group.

The arrangement of the groups for the purpose of the analysis was different from the original grouping. One subject each from group 1 and group 2 were exchanged, two subjects were shifted from group 4 to group 3 and one from group 3 was placed in group 4. This was necessary in order to make a better match between group 2 and group 3 and to see whether the lower verbal I.Q. of group 4 would affect the hesitation phenomena. Although the original sample was approximately 1600 words for each group this rearrangement altered considerably the balance of speech analysed for each group. The number of words also differs because the number of short utterances contributing to the total varied with each group. The very large standard deviation for the mean number of words in group 1 and group 3 is the result of one subject from each of these groups contributing a mean of 217.3 words and 194.3 words respectively. If these subjects' utterances are subtracted from the totals of their respective groups then the only major significant difference in the mean number of words for each group is between group 3 and group 5. The low total of words for group 2 was because one of the subjects, who in this analysis now appears in group 1, uttered a total of 652 words. He took up much of the discussion time. The total for group 4 is low because one of the original members contributed a total of 777 words but for the purposes of the analysis this subject is included in group 3. As all the measures used in the analysis are ratios, the real differences between the groups in absolute number of words is not so important as differences in the mean number of utterances contributed by each subject. For the critical comparisons there is little difference. In group 5 the mean number of utterances is somewhat higher.

Finally, the rearranging of the subjects could not in any way alter the results of the major class comparisons. The exchange of one subject between group 1 and group 2 made no difference as the scores on all relevant measures corresponded with the scores of the groups to which they were attached. This was also the case for the exchanges between group 3 and group 4.

RESULTS

The results are summarised in Table 3. One tail t tests were used as the direction of the differences was predicted in all comparisons.

TABLE 3

Group	Articulation Rate					Phrase Length				
	Mean	S.D.	Mean	S.D.	t	Mean	S.D.	Mean	S.D.	t
1 + 2 v.3 + 4	6.2	0.80	6.3	0.60	0.27 n.s.	6.3	2.00	8.9	1.92	2.69 p>0.01
1 + 2 v.3 + 4 + 5	6.2	0.80	6.2	0.50	0.00 n.s.	6.3	2.00	9.3	2.07	3.29 p>0.005
3 + 4 v.5	6.3	0.60	5.8	0.23	1.47 n.s.	8.9	1.92	10.0	2.28	0.87 n.s.
3 v.4	6.2	0.32	6.7	0.78	1.11 n.s.	8.9	1.91	8.9	1.69	0.00 n.s.
1 v.2	6.6	0.61	5.8	0.63	1.82 n.s.	7.6	2.14	5.1	0.49	2.33 p>0.025
2 v.3	5.8	0.63	6.2	0.32	1.14 n.s.	5.1	0.49	8.9	1.91	3.07 p>0.005

Group	Pause Duration per Word					Word Length				
	Mean	S.D.	Mean	S.D.	t	Mean	S.D.	Mean	S.D.	t
1 + 2 v.3 + 4	0.12	0.05	0.08	0.02	1.90 p>0.05	1.30	0.06	1.21	0.05	2.90 p>0.01
1 + 2 v.3 + 4 + 5	0.12	0.05	0.07	0.03	2.94 p>0.005	1.30	0.06	1.23	0.07	2.33 p>0.025
3 + 4 v.5	0.08	0.02	0.05	0.01	2.50 p>0.025	1.21	0.06	1.25	0.05	0.95 n.s.
3 v.4	0.08	0.02	0.07	0.02	0.02 n.s.	1.20	0.06	1.23	0.05	0.61 n.s.
1 v.2	0.11	0.06	0.14	0.04	0.93 n.s.	1.34	0.05	1.26	0.05	2.28 p>0.05
2 v.3	0.14	0.04	0.08	0.02	2.74 p>0.025	1.26	0.05	1.20	0.05	1.50 n.s.

Mean differences. There is no significant difference between the articulation rates for any of the comparisons, except for the intra middle class comparison where the difference is at borderline significance at the 0.05 level of confidence. This is in line with the findings of Goldman-Eisler (1961) for this measure. She has found that this rate is a constant of great rigidity inasmuch as it does not respond to changes in the level of verbal planning, as do pauses, but only to the effect of practice.

Differences in mean phrase length, mean pause duration per word and mean word length were found for the class groups matched for non-verbal intelligence. The working-class group uses a longer phrase length, a shorter mean pause duration and a considerably shorter word length.

The same pattern of differences was found (at a higher level of confidence for the hesitation phenomena and at a somewhat reduced level of confidence for mean word length) for the overall comparison between the class groups.

The only difference between the working-class groups (3 + 4 v.5), two of whom had an advantage of over 20 non-verbal I.Q. points, was in mean pause duration. The working-class group with the average I.Q. profile spends less time pausing.

The mean difference of 7.5 verbal I.Q. points is associated with no difference in the hesitation phenomena and mean word length for the working class groups matched for non-verbal intelligence.

Differences were found between the two middle-class groups matched for high non-verbal intelligence, for mean phrase length and mean word length. The group with high verbal intelligence used a longer phrase length and word length than the group with low verbal intelligence.

When the I.Q. profile was held constant and middle and working-class groups were compared, differences at a high level of confidence were found for mean phrase length and mean pause duration. No differences were found for mean word length. The working-class group used a considerably longer phrase length (3.8 more words to the phrase) and spent much less time pausing (0.06 seconds) than the middle-class group.

Scatter. The scatter about the mean for pause duration per word is considerably smaller for all the working-class groups. It is greatest for Group 1, that is the middle-class group with the superior I.Q. scores on both tests.

The scatter about the mean for phrase length is considerably and significantly less ($p > 0.05$) for group 2 when this group is compared with group 1 or group 3.

DISCUSSION

The first point of interest is that this technique of analysis discriminates between the groups and that the hesitation behaviour is independent of measured intelligence for this small sample and with reference to a discussion situation.

All predictions were confirmed except that relating to the hesitation pattern associated with the working-class groups independent of the level of non-verbal intelligence of the members. For this group, non-verbal I.Q. is related to the ability to tolerate delay associated with coding.

As frequency of pauses (phrase length) refers to the amount of monitoring of the sequences and thus to the number of intervals during which alternative possibilities are available and duration refers to the relative difficulty of selecting the next sequence, the two measures yield an index of coding difficulty. Duration also refers to the ability to tolerate delay and the resulting tension associated with coding difficulty. Word length yields a crude indication of the informational value of the output (Goldman-Eisler, 1958).

It would follow that the longer the phrase, the more well-organised the sequence and the more likely that the units will readily condition each other, their pairing being the result of common verbal conditioning within a community (Goldman-Eisler, 1958). In a fascinating paper Goldman-Eisler (1961b) has demonstrated that summarising (abstracting and generalising from perceived events) requires more time in pausing than does description. Fluency and hesitation would seem to discriminate between two kinds of speech and differentiate levels of verbal planning. These propositions were derived from data obtained in rigorous experimental conditions and checked against the content of the speech. In evaluating the results of the present experiment conducted in relatively free conditions some caution is required. Furthermore the content of the speech has yet to be analysed. The interpretations are therefore expectations about the organisation of the content.

In all inter-class comparisons matched or not for non-verbal intelligence, there are clear-cut differences in the hesitation phenomena which presumably indicate differences in verbal planning. In the critical comparison between the classes in which the I.Q. profile is held constant, the differences are even sharper. This would seem to mean at least that for the middle-class group, in this comparison, the conditions exist for greater lexicon and structural selection and thus greater appropriateness between the speech sequences and their referents. Further, the middle-class group can tolerate the delay normally associated with increasing information even though at this stage the informational value of the speech is not known. This delay was not associated with a marked drop in output.[4] The hesitation behaviour of the working-class group would seem to rule out the possibilities available to the middle-class group. The verbal planning orientations are different. Inasmuch as the word lengths for these groups are not significantly different, nor are their vocabulary scores, the differences in verbal planning orientation can be considered independent of passive and active vocabulary.

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3. It is assumed that frequency of pauses is an index of the degree of monitoring.

4. One member of the working-class group in this comparison failed to contribute any long utterances.

The intra-class comparisons indicate that for the working-class group matched for non-verbal intelligence but who differ by a mean of 7.5 verbal I.Q. points, no differences for the hesitation measures and word length occur. It is considered that these groups share a similar verbal planning orientation despite the difference in verbal I.Q. . There is considerable restriction of the scatter for the measure of mean pause duration. There are very few relatively long pauses, and this is even more pronounced in the working-class group with an average I.Q. profile. The latter group makes significantly shorter pauses and this is the only measure which discriminates this group from the working-class groups who have an advantage of over 20 non-verbal I.Q. points. This raises an interesting point. Differences in verbal I.Q. between the middle-class groups are associated with differences in phrase and word length and possibly articulation rate, while differences in non-verbal I.Q. are associated with differences in pause duration. The monitoring processes are affected in one case and only the interval between similar monitoring in the other. It would seem that for the average working-class group the delay between impulse and verbal signal is very short and the control (selection) of the subsequent sequences is reduced. Presumably the middle-class group with low verbal intelligence, relative to the middle-class group with high verbal intelligence, were in a situation of coding difficulty and responded by shortening the phrase length in order to avail themselves of a greater number of intervals during which alternative selections could be made. The difference between the articulation rates for the middle-class groups may be related to how well-practised the arguments selected were. The low verbal group would appear to have much difficulty at all coding levels but the members persevered in their orientation.

The behaviour of the middle-class group with the superior I.Q. profile is of interest. In comparison with the working-class groups matched for non-verbal I.Q. there is no difference in the hesitation pattern but only in word length ($p>0.005$). [5] However, the scatter for the measure of mean pause duration is significantly different ($p>0.05$). In fact 52.4% of the utterances made by this middle-class group have a mean pause duration of 0.09 seconds or over. The figure for the working-class is 34.3%. Over half the utterances contain relatively longer pauses. In other words, this middle-class group can avail itself of longer pauses. Although there is no significant difference, the mean phrase length of this middle-class group is shorter by 1.3 words per phrase. These results are taken to mean that the middle-class group produced a higher level of speech organisation, lexicon selection and information for similar monitoring (pause frequency) and that where necessary the delay associated with coding could be tolerated.

If now this discussion is related to the theory briefly outlined in the introduction, it is clear that the derivations have been confirmed. Middle-class and working-class subjects in this small sample are orientated to different levels of verbal planning which control the speech process. These planning orientations are independent of intelligence as measured by two reliable group tests and by word length. They are thus independent of psychological factors and inherent in the linguistic codes which are available to normal individuals. In psychological terms, the codes are stabilised by the planning functions and reinforced in the speaking. They are highly resistant to change as they encapsulate the major effects of socialisation.

From this point of view the general relationship between the verbal and non-verbal intelligence scores attained by members of the lower working-class stratum becomes somewhat more understandable. This does not rule out the role of innate factors; rather it becomes more difficult to evaluate their relationship to behaviour when the individual is limited to a restricted code and the educational process requires, at least, an orientation to an elaborated code. Children who already have this orientation are in a situation of symbolic development; those without it are in a situation of symbolic change.

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5. It is thought that this difference in length of word would be associated with a greater complexity of organisation, lexicon selection and informational output.

For various reasons, in particular the occupation of the mother before marriage and the role differentiation within the family, there will not be a one-to-one correlation between the use of a restricted code and the working-class stratum but the probability is certainly very high.[6]

The analysis of hesitation phenomena developed by Goldman-Eisler has discriminated between the proposed codes, has illuminated the nature of verbal planning processes and has provided an objective means for their assessment.

CONCLUSIONS

Two linguistic codes have been proposed, <u>elaborated</u> and <u>restricted</u>. These codes are regarded as functions of different social structures. They are considered to entail qualitatively different verbal planning orientations which control different modes of self-regulation and levels of cognitive behaviour. Social class differences in the use of these codes were postulated and the hesitation phenomena associated with them predicted.

Speech samples were obtained and the hesitation phenomena analysed from a discussion situation involving small groups of middle-class and working-class subjects with varying I.Q. profiles.

<u>Major results</u>

(1) Overall social class differences were found. The working-class subjects used a longer mean phrase length, spent less time pausing and used a shorter word length.
(2) Holding non-verbal intelligence constant, social class differences were found in the same direction.
(3) Holding verbal and non-verbal intelligence constant, social class differences were again found in the same direction, but not for word length.
(4) Within the middle-class group, the sub-group with superior verbal intelligence used a longer mean phrase length, a faster rate of articulation and a longer word length.
(5) Within the working-class group, the sub-group with the average I.Q. profile spent less time pausing.

The major predictions were confirmed. The results were considered as supporting evidence for the two codes and the different verbal planning orientations which are entailed.

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6. A more general description of the use of this code would be that the speech model is particularistic and the meaning channelled through the model also particularistic.

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